

IN THE CLAIMS:

1 1. (CURRENTLY AMENDED) A method for allowing a router to efficiently determine
2 a capability and configuration of a peer router in a computer network, the method com-
3 prising the steps of:

4 automatically determining which capability mode of operation the peer router
5 supports by sending an initial message from the router to the peer router, the initial mes-
6 sage including a first predetermined value of the capability;

7 if the router receives a positive acknowledgement of the initial message from the
8 peer router, determining that the peer router supports exchanges of messages using a new
9 capability mode of operation; and

10 if the router receives a negative acknowledgement of the initial message from the
11 peer router, deciding that the peer router does not support the new capability mode of op-
12 eration; and switching to an old capability mode of operation by resending the initial
13 message with a second predetermined value of the capability.

1 2. (ORIGINAL) The method of Claim 1 wherein the step of deciding comprises the step
2 of, if the router does not receive a response at all within a predetermined time, deciding
3 that the peer router does not support the new capability mode of operation.

1 3. (ORIGINAL) The method of Claim 1 wherein the initial message is Border Gateway
2 Protocol (BGP) routing protocol message and wherein the capability is a time-to-live
3 (TTL) parameter.

1 4. (ORIGINAL) The method of Claim 3 wherein the new capability mode of operation
2 is defined by BGP TTL Security Hack (BTSH).

1 5. (ORIGINAL) The method of Claim 4 wherein the first predetermined value of the
2 TTL parameter capability is 255.

1 6. (ORIGINAL) The method of Claim 3 wherein the second predetermined value of the
2 TTL parameter is 1.

1 7. (ORIGINAL) The method of Claim 1 further comprising the steps of, in response to
2 the router receiving a negative acknowledgement of the initial message from the peer
3 router:

4 upgrading the peer router to the new capability mode of operation;

5 rebooting the peer router, thereby destroying an existing session between the
6 routers;

7 establishing a new session by sending messages with the first predetermined value
8 of the capability; and

9 communicating between the routers using messages with the first predetermined
10 value of the capability.

1 8. (ORIGINAL) A system adapted to allow a router to efficiently determine a capability
2 and configuration of a peer router in a computer network, the system comprising:

3 a routing protocol process executing in the peer router and adapted to receive an
4 initial routing protocol message sent by an initiating routing protocol process executing in
5 the router, the initial routing protocol message including a predetermined value of the ca-
6 pability, the routing protocol process returning one of (i) a positive acknowledgement of
7 the initial routing protocol message to the router if the peer router supports exchanges of

8 messages using a new capability mode of operation and (ii) a negative acknowledgement
9 of the initial routing protocol message if the peer router does not support the new capabil-
10 ity mode of operation.

1 9. (ORIGINAL) The system of Claim 8 wherein the routing protocol process executing
2 in the peer router is the Border Gateway Protocol version 4 (BGP) routing protocol and
3 wherein the capability is a time-to-live (TTL) parameter.

1 10. (ORIGINAL) The system of Claim 9 wherein the new capability mode of operation
2 is defined by BGP TTL Security Hack (BTSH).

1 11. (ORIGINAL) The system of Claim 10 wherein the predetermined value of the TTL
2 parameter capability is 255.

1 12. (CURRENTLY AMENDED) Apparatus adapted to allow a router to efficiently de-
2 termine a capability and configuration of a peer router in a computer network, the appara-
3 tus comprising:

4 means for sending an initial message from the router to the peer router, the initial
5 message including a first predetermined value of the capability;

6 ~~if the router receives a positive acknowledgement of the initial message from the~~
7 ~~peer router,~~ means for determining that the peer router supports exchanges of messages
8 using a new capability mode of operation, if the router receives a positive acknowlede-
9 gment of the initial message from the peer router,;

10 ~~if the router receives a negative acknowledgement of the initial message from the~~
11 ~~peer router,~~ means for deciding that the peer router does not support the new capability
12 mode of operation, if the router receives a negative acknowledgement of the initial mes-

13 | sage from the peer router, ~~and means~~ for switching to an old capability mode of operation
14 | tion by resending the initial message with a second predetermined value of the capability.

1 | 13. (ORIGINAL) The apparatus of Claim 12 wherein the means for deciding comprises,
2 | if the router does not receive a response at all within a predetermined time, means for de-
3 | ciding that the peer router does not support the new capability mode of operation.

1 | 14. (ORIGINAL) The apparatus of Claim 12 wherein the initial message is Border
2 | Gateway Protocol (BGP) routing protocol message, the capability is a time-to-live (TTL)
3 | parameter and the new capability mode of operation is defined by BGP TTL Security
4 | Hack (BTSN).

1 | 15. (ORIGINAL) The apparatus of Claim 12 further comprising, in response to the
2 | router receiving a negative acknowledgement of the initial message from the peer router:
3 | means for upgrading the peer router to the new capability mode of operation;
4 | means for destroying an existing session between the routers;
5 | means for sending messages with the first predetermined value of the capability;
6 | and
7 | means for communicating between the routers using messages with the first pre-
8 | determined value of the capability.

1 | 16. (CURRENTLY AMENDED) A computer readable medium containing executable
2 | program instructions for allowing a router to efficiently determine a capability and con-
3 | figuration of a peer router in a computer network, the executable program instructions
4 | comprising program instructions for:

5 automatically determining which capability mode of operation the peer router
6 supports by sending an initial message from the router to the peer router, the initial mes-
7 sage including a first predetermined value of the capability;

8 if the router receives a positive acknowledgement of the initial message from the
9 peer router, determining that the peer router supports exchanges of messages using a new
10 capability mode of operation;

11 if the router receives a negative acknowledgement of the initial message from the
12 peer router, deciding that the peer router does not support the new capability mode of op-
13 eration, and switching to an old capability mode of operation by resending the initial
14 message with a second predetermined value of the capability.

1 17. (ORIGINAL) The computer readable medium of Claim 16 wherein the program in-
2 struction for deciding comprises one or more program instructions for, if the router does
3 not receive a response at all within a predetermined time, deciding that the peer router
4 does not support the new capability mode of operation.

1 18. (ORIGINAL) The computer readable medium of Claim 16 wherein the initial mes-
2 sage is Border Gateway Protocol (BGP) routing protocol message and wherein the capa-
3 bility is a time-to-live (TTL) parameter.

1 19. (ORIGINAL) The computer readable medium of Claim 18 wherein the new capabil-
2 ity mode of operation is defined by BGP TTL Security Hack (BTSH).

1 20. (ORIGINAL) The computer readable medium of Claim 16 further comprising pro-
2 gram instructions for, in response to the router receiving a negative acknowledgement of
3 the initial message from the peer router:

4 upgrading the peer router to the new capability mode of operation;
5 destroying an existing session between the routers;
6 sending messages with the first predetermined value of the capability; and
7 communicating between the routers using messages with the first predetermined
8 value of the capability.

1 21. (ORIGINAL) A system adapted to allow a router to efficiently determine a capabil-
2 ity and configuration of a peer router in a computer network, the system comprising:

3 an initiating routing protocol process executing in the router and adapted to send
4 an initial routing protocol message to a routing protocol process executing in the peer
5 router, the initial routing protocol message including a predetermined value of the capa-
6 bility, the initiating routing protocol process receiving one of (i) a positive acknowl-
7 edgement of the initial routing protocol message if the peer router supports exchanges of
8 messages using a new capability mode of operation and (ii) a negative acknowledgement
9 of the initial routing protocol message if the peer router does not support the new capabil-
10 ity mode of operation.

1 22. (ORIGINAL) The system of Claim 21 wherein the initiating routing protocol proc-
2 ess executing in the router is the Border Gateway Protocol version 4 (BGP) routing pro-
3 tocol and wherein the capability is a time-to-live (TTL) parameter.

1 23. (ORIGINAL) The system of Claim 22 wherein the new capability mode of operation
2 is defined by BGP TTL Security Hack (BTSH).

1 24. (ORIGINAL) The system of Claim 23 wherein the predetermined value of the TTL
2 parameter capability is 255.

1 25. (NEW) A method comprising:

2 sending an initial message to a peer router before a session is established with the
3 peer router, the initial message including a first predetermined value of a capability in a
4 field that is outside of a routing protocol that makes use of the capability;

5 if a positive acknowledgement of the initial message is received from the peer
6 router, determining that the peer router supports exchanges of messages using a new ca-
7 pability mode of operation;

8 if a negative acknowledgement of the initial message is received from the peer
9 router, deciding that the peer router does not support the new capability mode of opera-
10 tion and switching to an old capability mode of operation by resending the initial message
11 with a second predetermined value of the capability.

1 26. (NEW) The method of Claim 25 wherein deciding further comprises, if a response is
2 not received within a predetermined time, deciding that the peer router does not support
3 the new capability mode of operation.

1 27. (NEW) The method of Claim 25 wherein the initial message is a Border Gateway
2 Protocol (BGP) routing protocol message and wherein the capability is a time-to-live
3 (TTL) parameter.

1 28. (NEW) The method of Claim 27 wherein the new mode of operation is a BGP TTL
2 Security Hack (BTSH).

1 29. (NEW) The method of Claim 25 further comprising, in response to receiving a nega-
2 tive acknowledgement of the initial message from the peer router:
3 upgrading the peer router to the new capability mode of operation;
4 rebooting the peer router, thereby destroying an existing session between the
5 routers;
6 establishing a new session by sending messages with the first predetermined value
7 of the capability; and
8 communicating using messages with the first predetermined value of the capabil-
9 ity.

1 30. (NEW) An apparatus comprising:

2 a processor configured to execute an initiating routing protocol process, the initi-
3 ating routing protocol process configured to send an initial routing protocol message to a
4 routing protocol process of a peer router before a session is established with the peer
5 router, the initial routing protocol message including a predetermined value of a capabil-
6 ity in a field that is outside of a routing protocol that makes use of the capability, and
7 wherein

8 the initiating routing protocol process is further configured to receive one of (i) a
9 positive acknowledgement of the initial routing protocol message if the peer router sup-
10 ports exchanges of messages using a new capability mode of operation and (ii) a negative
11 acknowledgement of the initial routing protocol message if the peer router does not sup-
12 port the new capability mode of operation, and in response to a negative acknowlede-

13 ment of the initial routing protocol message, switch to an old capability mode of opera-
14 tion and resend the initial message with another predetermined value of the capability.

1 31. (NEW) The apparatus of Claim 30 wherein the initiating routing protocol process is
2 further configured to, if a response is not received within a predetermined time, decide
3 that the peer router does not support the new capability mode of operation.

1 32. (NEW) The apparatus of Claim 30 wherein the initiating routing protocol process is
2 a Border Gateway Protocol version 4 (BGP) routing protocol process and wherein the
3 capability is a time-to-live (TTL) parameter.

1 33. (NEW) The apparatus of Claim 32 wherein the new capability mode of operation is
2 defined by BGP TTL Security Hack (BTSH).